IN THE CIRCUIT COURT OF
THE 11TH JUDICIAL CIRCUIT
IN AND FOR DADE COUNTY, FLORIDA

GENERAL JURISDICTION DIVISION

MARIE J. FONTANA,

Plaintiff,

vs.

PHILIP MORRIS INCORPORATED, ("PHILIP MORRIS U.S.A."), R.J. REYNOLDS TOBACCO COMPANY, LORILLARD TOBACCO CO., and BROWN & WILLIAMSON TOBACCO CORP., Individually and as Successor to the AMERICAN TOBACCO COMPANY,

Defendants.

COPY

CASE NO. 00-01731 CA01

TRIAL

Volume 20

TRANSCRIPT OF PROCEEDINGS

in the above-styled cause before the Honorable Thomas S. Wilson, Jr., Circuit Judge, at the Dade County Courthouse, 73 W. Flagler Street, Miami, Florida, on Friday, March 30, 2001, at 1:30 p.m.

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(THEREUPON, the following proceedings were held:)

THE COURT: Who is our next witness?

MR. UPSHAW: Dr. Chris Teaf.

MR. GERSON: Your Honor, there is a motion concerning Dr. Teaf, or a matter I'd like to bring to the attention of the Court.

Dr. Teaf is a toxicologist from Florida State. And he's had no background in working with ETS, or studying it, until he became involved in this case. And he said in his deposition that he's done very extensive reading on it. And though there are some things, I suppose, that he would be able to -- that he would be qualified to testify to, included in his materials, evidently, are a lot of papers on sarcoidosis.

He's not a medical doctor, he's got no background in pulmonology. And I suspect, based on the expert disclosure that they made, that they may be asking him to say that ETS did not cause sarcoidosis. And I suggest there could be no foundation for it.

Are these to be used in his testimony?

MR. UPSHAW: Yes.

MR. GERSON: Could I look at them?

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MR. UPSHAW: I was looking for them for you.

THE COURT: Incidentally, Mr. Hunter, no more 30-minute preparation time.

MR. UPSHAW: I was going to tell you --

(Discussion off the record.)

MR. GERSON: This is all being shown to us for the first time here, for the first time right now.

THE COURT: That happened a few times last week.

MR. UPSHAW: I was going to say, and you showed us yours when?

Oh, by the way, on Mr. Gerson's motion, on direct, I do not plan to go into the medical portion.

THE COURT: No sarcoidosis?

MR. UPSHAW: No sarcoidosis testimony on direct. Now, if you want to ask him about it, I'm sure he'll have an answer for him.

THE COURT: I'm sure, too.

Mr. Gerson, anything else?

MR. GERSON: Yes, there are some things that are raised here. I'd like to ask that the foundation be laid before they put up a script

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and say to the witness: Now would you just read what I put on the chart? Because that's what's happened to us with other witnesses in this case.

THE COURT: That's not unreasonable. We can do that easy.

Other than that, are we now ready to proceed?

Hearing nothing, we're now ready to go.

Todd, bring them in, if you would, please.

Mr. Upshaw, do you want to get your witness and bring him in? He can sit right here.

(The jurors entered the courtroom.)

THE COURT: Good afternoon, ladies and gentlemen. Hope everybody had a good lunch.

Mr. Upshaw, who is our next witness?

MR. UPSHAW: Dr. Christopher Teaf.

THE COURT: Dr. Teaf, come on up here if you would please. As soon as you get comfortable, I'll swear you in and get you in and out as quickly as possible.

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Thereupon:

CHRISTOPHER TEAF, Ph.D.

been called as a witness, was duly sworn, examined, and testified as follows:

DIRECT EXAMINATION

THE COURT: Please state your full name, spell your last name for our court reporter, and give us your current address.

THE WITNESS: Christopher M. Teaf, T-E-A-F. My address is [DELETED]

DIRECT EXAMINATION

BY MR. UPSHAW:

Q. Good afternoon, Dr. Teaf. My name is Anthony Upshaw. And you and I have met before, have we not?

A. Yes.

Q. You live in Tallahassee?

A. Yes.

Q. How long have you lived there?

A. Twenty-five years.

Q. Are you married, Dr. Teaf?

A. Yes.

Q. Do you have any children?

A. I two young sons.

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Q. Dr. Teaf, what is your occupation?

A. I'm a toxicologist by training and by experience. I'm also the associate director of the Center for Biomedical and Toxicological Research at Florida State University.

Q. Now, I'm from Miami so I won't hold Florida State against you, but do you teach, as well, at FSU?

A. I do.

Q. Before we get into your teaching, let's go back to your background, your educational background, specifically. Tell us, from college, where you went to college, and move forward from there.

A. I have a bachelors degree in biology from Penn State University and a masters degree in biology from Florida State University. And a Ph.D. in toxicology from the University of Arkansas Medical School.

Q. Ph.D. in toxicology, explain to the jury, since they haven't yet heard from a toxicologist, what is toxicology?

A. Toxicology, in its simplest form, is the study of the adverse effects of chemicals on biological systems, that can be human beings or

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animals. As a practical matter, what toxicology really seeks to do is to identify circumstances in which adverse effects will occur or will not occur, since every chemical will have circumstances in which it will cause problems and those in which it will not.

Q. Have you focussed, in your practice of toxicology, on a particular aspect of that field?

A. Virtually all my work has been in the area of risk assessment or exposure assessment, which is the area of trying to determine to what extent exposure necessarily occurred before an effect will occur.

Q. Tell us a little bit about risk assessment. Can it be broken down into steps, and do we have anything to show the jury to explain that?

A. Yes. There's an exhibit.

Q. Okay. Can everyone see that?

Dr. Teaf, tell us what the four steps in a risk assessment are and explain each of them, would you?

A. Risk assessment is composed of four parts, that start with the simplest and go to the most complicated element.

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The first is hazard identification, which is simply determining whether or not there is likely to be a problem. That is, do you have chemicals present, is electricity present in another type of risk assessment that didn't involve chemicals?

The second part would be exposure analysis, which is the determination of how frequently, for how long, to what degree is somebody or is something exposed to chemicals or some other physical hazard, for example?

The third is toxicity assessment, which speaks to the question of, for the chemicals in this instance that are present, what is their toxicity, how serious is it, and under what circumstances will it exert itself?

Then the last is risk characterization. It takes the exposure assessment, the frequency, duration, the magnitude of the exposure, and combines it with the toxicity assessment, how toxic are these materials and at what level, and brings them together into a numerical evaluation of risk. A risk calculation could be a hazard index, some comparison with an occupation guideline, for example.

Q. Let me focus on exposure analysis. How

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important is that phase of your risk assessment?

A. Well, exposure assessment frequently is the dominating factor; the toxicity assessment for most substances that we're familiar with is a literature exercise.

We go identify what the federal or state guidelines are, we list what the chemical possibilities are. But exposure assessment is going to be individual, it's going to be unique to a person. It's going to determine or it's going to be used to determine how likely their risks are, how long have they been there, how frequently are they there. And it can make a great deal of difference how frequently something or someone is present.

Q. I've asked you to come here today to explain your risk assessment and exposure analysis for Ms. Fontana, correct?

A. Yes.

Q. Let me go back to, we've talked about what the four steps of a risk assessment are, but let me connect that with your education.

Are some of the courses that you've taught, and your background and experience -- what are some of the courses that you have taught which would help you in making your risk assessment or

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exposure analysis for Ms. Fontana?

A. Well, at Florida State as well as at other universities, I've taught both toxicology and risk assessment, which would be the basics, as well as areas such as indoor air quality, specifically exposure assessment, as a piece of the puzzle. Occupational health and safety, environmental health and safety.

Q. Now, what level students have you taught these courses to?

A. I teach at the university both graduate and undergraduate students as well as medical students, in some courses.

I also teach a variety of health and safety training courses to state and federal agencies who are in the business of dealing with chemical on a regular basis.

Q. Do you teach any medical students or have you?

A. Yes.

Q. You mentioned some other universities where you've taught. Where else have you taught courses?

A. I occasionally teach at the University of Florida in Gainesville, and I also regularly teach

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in the pharmacy and environmental toxicology program at Florida A&M University in Tallahassee.

Q. Dr. Teaf, I have your CV here, one copy of it. I'm not going to go through this entire thing with you; I'm going to point out a few things, if you don't mind. I think the CV is 27 pages long, and we don't want to spend that much time, I'm sure, on your illustrious background. But let me focus in on some of your history relating to toxicology and risk assessment.

From 1992 to 1998 you were the chairman --

MR. GERSON: Excuse me, can I have a copy that? We were never given a copy.

MR. UPSHAW: Yes, you were, sir, but we'll give you another one.

BY MR. UPSHAW:

Q. From 1992 to 1998, you were the chairman of the Toxic Substances Advisory Council for the Florida Department of Labor. Can you explain to us what your work was in that position?

A. Yes, sir. The Florida Department of Labor was assigned the task in 1985, as a result of what they call the Florida Right to Know Law, to implement worker protection guidelines in the state similar to a state-run OSHA, if you will, or

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Occupational Safety and Health Administration.

The Toxic Substance Advisory Council was formed by the Secretary of Labor. There were anywhere from 10 to 13 or 14 people at any one time, whose backgrounds varied from industrial hygiene, chemistry, toxicology, administration of workplace exposure levels, that type of thing.

I served on it for several years and then ultimately was the chairman of it for several years.

Q. 1994 to 1995, you were the Human Health Co-chair of the Florida Comparison of Environmental Risk Project. What was that?

A. That was a project involving the Department of Environmental Protection, the U.S. EPS, and a couple of other entities within the state, that was designed to identify and prioritize risks that people faced, whether they be from the food supply or for indoor air quality, for pollution or waste management, or for a variety of other things that all impact each of us all the time. It's what we are, and the job was to try to identify those and prioritize those.

Q. Who funded that?

A. U.S. EPA. Environmental Protection Agency.

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Q. The U.S. version, is that there a state version of that EPA?

A. Yes. It was funded through the Florida Department of Environmental Protection.

Q. Now, 1985 you formed a group called Hazardous Substance and Waste Management Research, Inc. Correct?

A. That's correct.

Q. What does that organization do?

A. That's a private corporation. It's a risk assessment and toxicology firm. I do projects like this or risk assessments for contaminated sites. We do a lot of work in Central and Eastern Europe. Situations there are considerably worse than they are here. Primarily to evaluate risk, look at exposures to identify populations that may have risks, and to assist in the determination of what should be done about that.

If the risks are significant, should remediation occur, workplace practices be changed, those types of things.

Q. Have you done any projects in the Miami area?

A. Yes, I have. I've done quite a few contamination projects in the Miami area. But the

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biggest has been the Miami International Airport clean-up that I'm working on as a consultant to American Airlines.

American Airlines has, as many of you may know, the largest presence in Miami of any airline, and therefore has the greatest degree of interest in ensuring that things are done properly at the airport. And I've worked with the Miami-Dade Aviation Department, as well as Dade County Environmental Resource Management to assist in the assessment of risks there, and again, what should be done about them.

Q. Now, other than your work at the university and your work with the organization, you've also found time to publish, correct?

A. Yes, I have.

Q. And you've published over 30 -- or tell me how many peer-review articles have you published.

A. I haven't counted them, but I say there's probably somewhere around 35 in there.

In addition to that, there's a wide variety of abstracts presented at scientific meetings, book chapters, things like that, that don't undergo the classic peer review that a journal article would undergo, but nonetheless are listed on

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there.

Q. Now, before we asked you to evaluate Ms. Fontana's environmental tobacco smoke or ETS, as I'll call it, exposure, had you done this type of thing before?

A. The chemicals that I've evaluated are many of the same ones that are involved in environmental tobacco smoke. I had not done any environmental tobacco smoke evaluation to this point.

Q. Tell us how your experience and your education in toxicology, your work as a professor or as an instructor at the Florida State University and other universities, prepared you to testify in this case regarding Ms. Fontana's exposure.

A. From my point of view, the interest was in how long was the exposure, what type of work did she do, how long did she do it, and under what circumstances, what kinds of conditions existed in the aircraft cabin, and to what extent did the literature reflect that, what do we know about all those things, and synthesize that into an exposure assessment and ultimately into a comparison with occupational guidelines for the chemicals for which there are available.

Q. To formulate your opinions you had to

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review some material, correct?

A. A great deal of material, yes.

Q. Tell us what materials you did review to formulate your opinion.

A. I have reviewed the toxicological literature both for ETS as well as for individual components or chemicals that are present in ETS. There have been many, many written on that subject.

I also have reviewed the toxicology information for the specific chemicals themselves, independent of their presence in ETS. Because many of these substances are present in our daily lives from a variety of sources.

I have reviewed Ms. Fontana's flight records. I've reviewed her medical records. I've reviewed some insurance files. I reviewed some testimony from this case and from a previous case in the instance of Dr. Hammond. And I've reviewed the depositions of Ms. Fontana.

Q. Let's start from the back forward, the depositions. Why would you review the deposition testimony?

A. Again, to understand the circumstances not only of her work history, what she did and when she did it, and for how long she did it, but what the

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circumstances were, and perhaps equally importantly, what was it that she believed her health effects to be. And she was asked those specific questions.

Q. Why would you review her medical records?

A. Again, for the same reason that we -- whenever we're looking at a toxicological question, it's important to understand what effects are being identified or being claimed, so that we can determine whether the kinds of exposures are significant or capable of producing the kind of health effects that are being identified.

Q. And you reviewed her flight logs and employment records for what reason?

A. For the purpose of identifying how long she flew, when and in what periods she may have flown, where she went, to identify the difference between smoking flights and nonsmoking flights, for example, which would have a great deal of influence on what the exposures may have been.

Q. By the way, in your review of her flight records, did you determine whether or not her flights from New York to San Juan were smoking or nonsmoking?

A. Yes, I did.

Q. What was your -- the basis, the resource

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you used for that?

A. I assumed that they were nonsmoking for the reason that they have been non-smoking since 1989.

Q. How did you find that out?

A. Well, there was a federal regulation that banned smoking on flights to San Juan and other parts of the Caribbean from the United States or within the United States.

Q. You said you reviewed lots of literature. Would you say you have reviewed all the literature on environmental tobacco smoke in airline cabins?

A. I'm sure that there must be some papers I've not even seen. I have reviewed anything I could get my hands on, yes, sir.

Q. In reference to what other toxicologists do in doing their risk assessment, have you done the same thing, look at the same materials that are required for a toxicologist to look at to make that assessment?

A. Yes, I believe you would have to look at these kinds of information in order to draw a reasonable conclusion about whether any effect at all was likely or unlikely.

It's important in toxicology to point out

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that the presence of a material is not equal to its significance. That is, just because something is present, unless we know at what level it's present, unless we know to what extent someone is exposed to it, it's not appropriate to just assume there's a hazard from it.

Q. Let's step through with Ms. Fontana the four steps for risk assessment. In fact, did you go through all four steps --

A. Yes, sir.

Q. -- when you were evaluating Ms. Fontana's exposure?

A. I explained all four. The one that we probably did not conduct to the degree that I might conduct it in normal circumstances was the risk characterization. That's normally a numerical exercise, calculation of toxicity values that come from EPA or some other organization, and a comparison of those with how frequently or to what extent is someone exposed, in this case the comparison between the concentration level and the permissible exposure limits to occupational were what we did here.

Q. For Ms. Fontana specifically, what were the two primary things, I'll call them, that you

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looked at to make your evaluation and your opinion?

A. Primarily the exposure, the frequency and duration as well as the air concentrations in the airline cabin.

Q. Did you make comparisons, when you were looking at Ms. Fontana, to other occupations?

A. Yes, I did. And also, beyond office workers, home exposure, too, living with a smoker.

Q. Why would you try to compare Ms. Fontana's ETS exposure to other people, to what other people get in other environments?

A. Well, I thought it was important, both for my own benefit as well as the benefit of the jury at some point, to identify the comparative level of exposure that Ms. Fontana may have encountered with those that maybe in an office where smoking is allowed, or a home where there may be one or two smokers. And also, the maximum that would be allowed under an occupational scenario, the permissible exposure limit as established by the Occupational Health and Safety Administration.

It's important, though, that those values are established as protective values, not values that if exceeded will instantly be a problem. So I felt that that comparison was a reasonable one to do

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for her.

Q. Based on your education, your experience, your review of Ms. Fontana's records, do you have an opinion, within a reasonable degree of medical probability, regarding Ms. Fontana's ETS exposure?

A. Yes, I do.

MR. GERSON: Objection. Form and foundation.

THE COURT: Form and what?

MR. GERSON: Well, form, he asked for a medical opinion.

THE COURT: That's sustained as far as medical opinion is concerned.

BY MR. UPSHAW:

Q. Do you have an opinion with regard to her exposure, Doctor?

A. Yes, I do.

Q. What would that be?

A. That there is no instance that I'm aware of in which she exceeded or even approached a permissible exposure limit, as it would be identified normally, and in the comparison that we would typically do.

Q. Let's step back and look at the comparisons you made to environments where

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environmental tobacco smoke would be present in your comparisons with Ms. Fontana.

Starting out with a person who lives with a smoker, what was the comparison you found with Ms. Fontana's exposure?

A. Although it certainly will range depending how many smokers are in the home and how long a person spends in the home during the period of a day, my estimate is it's approximately four to ten times higher for a person living with a smoker than a person like Ms. Fontana, perhaps greater than that.

Q. You also made a comparison between Ms. Fontana and someone who worked in an office where someone smoked; what were the results of your comparison?

A. My comparison there is, again, depending upon the type of office, depending upon what's been reported in the literature about the number of smokers in an office and the concentrations that a person living, working in an office with a smoker, or in a building where smoking is permitted, would have exposure on the order of two times to five times greater than that which she was exposed to.

Q. I've used the term ETS, environmental

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tobacco smoke, and you have as well. We heard a definition just previous to your testimony from Dr. Ogden.

How would you define environmental tobacco smoke?

A. Environmental tobacco smoke is defined relatively straightforwardly, if you consider the right parts. It's sidestream smoke, aged and diluted, that is released, chemical processes go into the air and it becomes aged.

It also is diluted very, very quickly in the immediate area in which it's released. So there's aged and diluted smoke from the tip of the cigarette as well as aged and diluted mainstream smoke or smoke that has been inhaled by the smoker and exhaled again.

But the same processes act on that, once it's been exhaled, aging occurs and dilution occurs.

Q. Now, we talk about exposure to ETS, what do we really mean by exposure?

A. Exposure is always going to be a function of the length of time a person is exposed, the concentration to which they're exposed, what their breathing rate is. There's a variety of things that go into the calculation of assumptions with regard

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to exposure.

Q. Okay. You've developed a picture here to show that, right?

A. Yes, I have.

MR. UPSHAW: Your Honor, could the witness step down?

THE COURT: Sure.

BY MR. UPSHAW:

Q. Dr. Teaf, would you step down and show the jury what we're seeing here?

A. As I've mentioned on a couple of occasions, exposure is really a function of concentration. And I've used this rectangle with some dots in it to indicate concentration. With greater concentration, there would be a larger number of dots; with lower, there would be a smaller number of dots.

We measure that in micrograms per cubic meters or milligrams, some measure of concentration.

We add to that the period of time that the person is exposed. That, itself, has two elements, both the duration of time that they're exposed, minutes or hours, and the frequency. Is it once a day, twice a day, is it three hours a day?

So there are both elements important to

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the calculation of time. That gives us a measure of the exposure.

Q. Okay. Now, how do you measure concentration?

A. Concentration is measured by devices called -- well, there are pumps and meters that can measure concentration.

Normally what happens is that there is a known amount of air drawn through a pump, and the material that's present in that stream of air that goes through is trapped on a filter, on a particular medium that will capture it.

And then they wash that material off. But they know how much air has gone through that tube in a given amount of time. So you get micrograms per cubic meter, or for volume of air, that goes through that stream or through that filter.

Q. Now, can you say that someone, or find out how much someone has been exposed to some constituent or some chemical by just saying: Well, they were in this environment for 22 or 24 years?

Did you do that?

A. No, you would need to know how long in a day that person had been there, how many days a year, how many years, where in the environment they

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were present; in this case, the difference between, say, a smoking section and a nonsmoking section on an airline.

Q. Now, what about duration? You've discussed it briefly here. But if you're exposed to something for a long time, is that what you're talking about, duration?

A. Yes, duration is one of the two elements. Duration would be the number of hours, let's say, or the number of days per year, whereas the frequency would be -- excuse me, the duration would be the number of hours, and the frequency would be the number of days per year, how frequent is that person there.

Q. I think you have a chart on that, too, don't you?

A. This goes to dose, where duration is involved, correct.

Q. Yes.

Q. Now, this is dose. Talk to us about dose.

A. We've talked about exposure and said it's concentration times time. But again, it's time doing what? And in this instance, it's time breathing. And so we have a breathing rate. And breathing rate is a measure not only of the number

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of breaths that you take a minute or an hour, but how deep each of those breaths are.

And those are going to be a function of your work level. When your body works harder and the muscle works harder, you need more oxygen and you have to breathe more deeply or more rapidly or both.

We usually reflect this in a combined term, which is liters per minute or cubic meters per hour. That's the amount of air that we're breathing in, which we use in conjunction with the concentration, micrograms per cubic meter, let's say, and then meters cubed per hour for the breathing rate. And then how many hours.

And from that we get a unit, or we get units that toxicologists use, which are milligrams, chemical, how many milligrams of the chemical per kilogram of your body weight -- and a kilogram is 2.2 pounds -- I'm about probably 65 or 70 kilograms -- per day, that way you can compare things where people may have different durations or different concentrations, and you can compare them by a normal unit of milligrams per kilogram body weight per day. And you'll see later how that's done.

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Q. Let me try to explain that in U.S. terms so you can compare a 200-pound man to 110-pound woman?

A. Correct.

Q. Okay. Kilograms, metric things throw me off.

How do you determine -- you talked about concentration, talked about time; how do you determine the breathing rate?

A. There are a variety of studies that have been conducted for a number of activities, the most comprehensive is what I call the Exposure Factors Handbook, that EPA has developed.

It has a huge compendium of different kinds of activities for men, women, children, describes different levels of rest, light exercise, moderate activity and heavy exercise or heavy activity.

It gives you different values that have been conducted or have been collected from studies.

For example, light activity may be a third or half a cubic meter per hour.

Q. Do you have something to illustrate what you're talking about?

A. I do.

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Q. Take down our dose here for a second.

Tell us what we're looking at here.

A. What you're looking at is a very simplified way to try to explain what I just was talking about.

Different kinds of activities are associated with different breathing rates, everybody knows when you walk up stairs more than a flight of two, you start to get out of breath, you breathe faster, you breathe more deeply. So if you see on the left-hand side, resting, whether it be sleeping or sitting around or watching television is typically on the order of five liters per minute.

That can be converted to cubic meters per hour, but for the purpose of right at the moment, let's use these comparisons at the bottom.

The next section or next panel is light activity. In this case it's while sitting or standing. When you're standing up regardless of how calmly you think you're standing, your body is doing work, your muscless are keeping you standing upright. And that requires a little bit of work. And you'll use a little bit more air than if you were sitting down. That's about eight liters per minute.

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The third one is sort of a mid range, light activity. You see a waitress at a restaurant or someone doing light gardening activity. These things are light exercise. Doing something on a fairly continuous basis, you may have periods of faster activity and periods of slower activity, but over the long haul you're in the light activity category.

The next would be continuous moderate activity, exercise, you see someone running at three or four miles an hour here. You see someone in an aerobic costume. What you've got is clearly more physical exercise, body is demanding more oxygen, you're going to breathe deeper, faster. And that's about 27 liters per minute. Again, from the EPA's values.

The last on the right-hand side is heavy exercise. I've selected a person riding a bicycle fast, playing basketball. Getting close to 50, 50 liters per minute, that's clearly strenuous physical exercise.

Q. Now, you fit one of these liters-per-minute values into the breathing rate portion of the equation --

A. That's correct.

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Q. -- for dose. What did you choose in your calculations for Ms. Fontana as the breathing rate which corresponds to being a flight attendant or working flight attendant?

A. Based on the EPA's calculations and based on the guidance in those documents, light activity would be most descriptive or most likely to be descriptive of her activity, continuous activity, sometimes working harder than others, sometimes sitting and resting, but over the long haul, being at in this case, 17 liters per minute, which is equivalent to one cubic meter per hour.

That's just what it sounds like. It's a meter. By a meter, by a meter, believe it or not, you would inhale that much per hour under light activity.

Q. Now, the jury has heard from another witness that a breathing rate of 30 liters per minute would be applicable to the work that a flight attendant is doing.

Can you explain why that is or is not applicable in this case to Ms. Fontana?

A. Thirty liters per minute, and again, remember, these are continuous, this is somebody doing this continuously for a long period of time.

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30 liters per minute is about 1.8, a little over 1.8 cubic meters per hour. That's almost two cubic meters per hour. That's simply not reasonable for normal, physical, walking around, light exercise kind of an activity. Particularly not over a long period of time when sometimes they may be doing that, but other times they may be sitting and resting.

Q. So this would require at 30 liters per minute, which is more than you've indicated here, someone to do this activity continuously?

A. That's what would be assumed, yes.

Q. How did you determine specifically what Ms. Fontana's ETS dose was?

A. In this instance, I've used, for a variety of chemicals, the air concentration that was present both in the smoking and nonsmoking sections of an airliner, the amount of time she spent in those airliners, and I used her flight logs to determine that, as well as her breathing rate, as I said earlier, of one liter per hour. One cubic meter per hour, 17 liters per minute, that middle panel there.

Q. Now, in formulating that opinion, you looked at some studies. Was there one study in particular that you relied upon to formulate your

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opinions?

A. I've reviewed quite a few, probably, at least two dozen studies on that. And the one that stands out as the most detailed, the most comprehensive is the one done for the U.S. Department of Transportation in 1989 called Geomet.

You may hear me refer to it as Nagda, which is one of the authors, primary author. But it's generally referred to as Geomet.

Q. Tell us why that particular study stood out for you. What parts of that study, why was that more important to you than the other?

A. The Geomet study was, if you've seen it, it's two or three inches thick. It covers a wide variety of take-off and destinations, considers a wide variety of smoking and nonsmoking flights. Considers a variety of constituents or chemicals that were measured to associate with ETS.

It's just a very broad, distinct study that covered a very large area as compared to some of the others, which are more limited in the questions that they answered. They may have answered a question, but in a relatively limited way, that causes you to want to get additional information.

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Q. You mentioned the number of flights. Did you create an exhibit with regard to the Geomet study and the flights that were used?

A. Yes, I did.

Q. Again, Dr. Teaf, tell us what we're looking at here.

A. This is the domestic flight departure sites from the Geomet study. And it shows you both the number -- well, first of all, it shows the number of flights that were considered to draw these conclusions, which is quite a large number.

It also distinguishes between nonsmoking flights in the green and smoking flights in the orange. And it shows you that there was a good balance of both, both in terms of duration of flight, several hours at a time, some short flights, some long flights, different kinds of aircraft, equipment, as they call it.

But overall, it just covered a wide variety of things that were not addressed in any other study alone.

Q. The jury has heard about another study, the Mattson study. They've heard another witness who relied on that study. Did you review that study as well?

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A. Yes, I did.

Q. Can you tell us why you did not rely on that study as heavily as the Geomet study?

A. I used it, but I didn't use it as much as the Geomet study because it simply didn't do nearly as much in the way of comprehensive evaluation. It's a piece of information that one certainly can't ignore, but it's a --

Q. I'll put it up here. I've put up another board, and this is the Mattson-Hammond-Geomet study. Tell us about that.

A. It considered only smoking flights, that is, it didn't provide itself any background against which to compare the levels that were found against the chemicals that we know are naturally occurring and which we need to understand on a nonsmoking flight, how much carbon monoxide is there.

If we're going to try to assess the significance of carbon monoxide on a nonsmoking flight, then we need to know how much carbon monoxide is on a nonsmoking.

There were only a couple of destinations and take-off points. There were only one analysis for chemicals. So it just simply was a piece of the puzzle, but not as comprehensive a study as any of

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the others.

Q. All right. Let's get directly now to your opinions and your comparisons of Ms. Fontana's ETS exposure to someone who lives with the smoker.

I'm going to put back up the dose so you can tell us specifically what you looked at with regards to concentration, ventilation and so forth.

Let's put up dose.

A. As I mentioned earlier, in each of these instances, you have three things that are of importance, and those each have some sub-elements to them. But first of all, you've got to know the concentrations.

I reviewed the data that have been presented for a variety of studies and selected concentrations that were representative of the group of studies. Rather than picking any particular one, I took an aggregate of those studies. I think that's important when you realize how different these studies are and over what period of time they've been conducted.

The next thing I did was, in terms of Ms. Fontana's flight logs, look at the number of smoking flights and the number of nonsmoking flights she was on. And I made assumptions about what

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period of time she spent in the smoking section and the nonsmoking section.

In this instance, because it's possible that for some flights she may have been there half and half, half in the smoking and half in the nonsmoking section, I made that assumption, although it's likely that on domestic flights it was probably lower than that.

And then finally for breathing rate, I assumed 1 liter, 1 cubic meter per her hour, about 17 meters per minute, for Ms. Fontana, based on light activity.

Remember, this is not suggesting that there weren't times in which she may have had more physical activity than others, but over the period of time of, say, an eight-hour flight, she was certainly resting at some point, certainly sitting down at some point, and other points she was working, delivering materials to passengers, she was taking away things. But one cubic meter per hour is a standard assumption for light work in an occupational environment.

Q. How do ventilation rates play into your equation?

A. Well, the beauty of using the air

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concentrations from the airline cabin is you don't have to speculate what about ventilation was. The air concentrations that are present reflect whatever ventilation was occurring, that is, the ventilation occurs, the release occurs, the ventilation occurs, and gradually you reach an equilibrium. And at some some point, that might be slightly higher or lower.

But you have measures of the concentration over long periods of time, which then allows you to have that concentration term.

Q. Now, it you made a comparison of Ms. Fontana's situation exposure with that of someone living with someone who smokes. How did you equate those concentrations, I mean, somebody who lives with a smoker 16 hours a day, to Ms. Fontana, who flew eight, ten hours?

A. The key difference in those is time. Right here, in terms of the fact that Ms. Fontana, in at least a couple of years, flew between eight and 900 hours. You're talking about a person staying home 16 hours a day or spending 16 hours a day, at least, in the home, being in their home on the order of 5,500 to 6,000 hours a year.

Even if the concentrations were exactly the same, the person at home is exposed for that

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much more time, perhaps eight to ten times more. For an occupational worker, 40 hours a week, 50 weeks a year. Let's say they take a vacation, that's 2,000 hours, 2,000 hours is what is typically considered to be reasonable for an occupational situation. Except in a case like Ms. Fontana's, where her occupation is different. And this case is different in a downward direction.

Q. Let's stick with the living with smoker and your final determination in the comparison of those two environments; Ms. Fontana's aircraft cabin environment and the person living with the smoker was what?

A. Anywhere from four to ten times greater for a person living with a smoker. And some cases you can argue that it may be even higher than that.

Q. Now, how did that compare with the data from the Hammond-Mattson study?

A. Well, Dr. Hammond has testified that the living with the smoker was about five times greater than Ms. Fontana's exposure, or flight attendant exposure, actually, generic flight attendant.

Q. Now, let's shift gears then to a person who works with a smoker or occupational situation, an office worker, I think you explained it, correct?

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A. Yes.

Q. Same thing, tell us how you got to that comparison. Did you use the same issues with regard to concentration duration?

A. I used the same breathing rate. Again, you have an office worker situation, where people will be doing different things over the course of a day, going up and down stairs, walking in and out of offices, maybe lifting things, used one cubic meter per hour. But remember, 2,000 hours per year at 40 hours a week. You automatically have a built-in two or threefold increase in time. And the concentrates are a little different.

Q. How did that compare?

A. Anywhere two to five times greater for a person in an office which had smoking compared to Ms. Fontana.

Q. Okay, if you'd have a seat.

I want to shift gears now to what you talked about, as part of the risk assessment, was the exposure to different constituents or chemicals in environmental tobacco smoke. You looked at those as well, did you not?

A. Yes.

Q. Now, are there any chemicals in

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environmental tobacco smoke which are unique to ETS?

A. There are a few. And they're related to the tobacco origin of the product.

Q. What would those be?

A. Nicotine is one. There are a number of amines, what we call amines, or nitrogen-containing compounds that are unique to tobacco. Probably 10 others.

Q. The jury has heard some testimony about some other chemicals. Let me bring those up with you, as our testifying toxicologist. I think they've heard about nitric oxides. Are nitric oxides unique to ETS?

A. Nitric oxide is by no means unique to ETS. And it's formed as a product of incomplete combustion or combustion of a lot of different products, fuels, automotive exhaust.

Oddly enough, nitric oxide is one of those instances where it's naturally produced in the human body, and actually is present at about 10 to 100 times higher concentrations in your nasal passages and in your sinuses than is present in an airline cabin or, for that matter, in an ETS circumstance.

So nitric oxide is not unique to ETS and not unique to many other things either. It's

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ubiquitous or its commonly present in the environment.

Q. The jury has also heard about carbon monoxide, bantied around the courtroom. Is that unique to ETS?

A. No, it's not unique.

Q. Where else would you find carbon monoxide?

A. Again, carbon monoxide is found in the atmosphere, ambient air, we call it, somewhere between one or two or three parts per million, depending where you are, is the natural level of carbon monoxide in the atmosphere in Alaska or in the antarctic. It's simply a component of the atmosphere.

It can be increased, or you can find increased levels of it in homes or businesses, for example, burning of natural gas in cooking; again, automotive exhaust, for example; small lawn equipment exhaust. Carbon monoxide is very, very commonly produced as a product of incomplete combustion.

Q. Now, is arsenic unique to ETS?

A. No, it's not.

Q. The jury has heard about that, too. Where are some of the other sources of arsenic?

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A. Arsenic is present in a variety of circumstances, including at low levels in a variety of foods that we eat. Naturally occurring, it's very high in seafood in some kinds of shellfish, crustaceans, shrimp and crabs.

It's also present at levels that are approximately equivalent to those in an airline cabin, in the natural air that we're exposed to in urban environment or even suburban environments, about one nanogram per cubic meter.

So, although we tend to think of arsenic as some sort of ultra hazardous material, it's present in our day-to-day environment and we deal with it.

Q. I was just going to ask you about that. Arsenic -- we know that a drop of arsenic will probably kill you. That's the common poison, I guess, so to speak, poisoned by arsenic, that one drop of arsenic, how does that compare with the numbers you're referring to?

A. That one drop of arsenic may be a gram or two. What I'm talking about is a nanogram or two or 20.

In those instances, you're talking about numbers that are at least a million and probably a

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billion times lower than what would naturally be occurring.

Q. Is it accurate to say then that the amount you get determines the poison -- I forgot the term --

What is it?

A. Well, there's a principle of toxicology that I had described to you which is that the dose makes the poison. The dose that we're exposed to, again, the frequency, the duration, magnitude of exposure, determines whether we'll have a problem or we won't have a problem.

If I have a headache and I take two Tylenol, my headache will probably eventually go away. If I grind up those Tylenol into a powder and I take one particle out of that powder and eat it, my headache won't go away.

By the same token, if I take 50 or 60 of those Tylenol, I will become very ill and I will probably have to go to the hospital. It's all a matter of not the chemical, itself, but how much of it are we being being exposed to and under what circumstances.

Q. Now, when you looked at chemicals that Ms. Fontana was exposed to, did you look at how she

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was exposed to them or to what levels she was exposed to them?

A. Yes, I did.

Q. Did you apply any particular definitions to the levels that you looked at?

A. The units that I used were micrograms per cubic meter, for the most part to some of them are nanograms, which is a thousand times less than micrograms, very low.

Q. Earlier, when we first started, you said something about permissible exposure limits. Explain to the jury what that is. And I think I have the definition here, if you'd like for me to put it up.

A. Yes, please. The permissible exposure limit, and I'll refer to it from now on as probably the PEL, it is an established level for protection of the working population. It's established by the Occupational Safety and Health Administration, and they've been in place for some time.

It's to protect workers against health effects of exposure to hazardous substances. There are available PELs for a few hundred compounds, and the definition that's available for the PEL is, and I'll read it, since I can't remember it exactly:

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Standard which assures to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health even if such employee has a regular exposure for the period of a working life, which OSHA defines as approximately 40 years.

Q. So that's almost twice what Ms. Fontana was exposed to?

A. That definition of 40 years is about twice as long as her 22 years.

Q. Now, as an experienced toxicologist, do you work with PELs often?

A. Yes.

Q. In fact, in your role as chairman of Toxic Advisory Council, how did you work with these PELs, specifically?

A. The Florida Department of Labor, as I said, had responsibility for implementing this Florida Right to Know Law. They developed, as a matter of our activities, what was called the Toxic Substances List for the state of Florida.

And in those instances where we had available PELs, those became the guideline values for the protection of the working population.

Q. Permissible exposure limits, PELs, must

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have been easy for you. You looked up tobacco or ETS and there it was, right?

A. No.

Q. There is no PEL for environmental tobacco smoke?

A. No, as I'm sure the jury knows, there is a combination of materials that are present in ETS. And there are individual PELs or PELs that are present for several hundred substances, but there is no ETS PEL.

Q. So how do you look to the PELs to determine what level of exposure Ms. Fontana had?

A. Well, the way that I did it in this case was to, first of all, on a regular basis, compare the concentrations that were present to the PEL.

And I mentioned earlier that there's no instance in which that concentration really approached the PEL. But I also did a slightly more complicated analysis in which I took the amount that is available or the amounts that would be potentially acceptable for a worker, and said, if a worker worked for a week, 40 hours, that person would be acceptably exposed to a certain quantity of material.

How long would it take Ms. Fontana to get

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that same exposure that an occupational person had, allowably, for a week?

And there's a board here, I think, that looks at that question.

Q. Before we look at this board, let me just get your opinion straight for the jury.

In your calculations and in your review of materials, as a professional toxicologist, did you find that Ms. Fontana had reached the PEL, or permissible exposure limit, for any ETS constituent?

A. No, I did not.

Q. Come explain to us, you were talking to us about this weekly permitted dose, and explain to us what we have here.

A. I've identified this stick figure here as a person exposed at the OSHA PEL, permissible exposure limit. In this instance, you'll see several others, I've selected carbon monoxide.

Again, carbon monoxide is present in natural air, it's also clearly elevated to some degree by ETS or in ETS. I've assumed my circumstance here, for these calculations, that all of the carbon monoxide came from ETS. That's clearly not the case, it's clearly an overestimate.

But you get into too much of a complicated

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set of calculations if you try to subtract out what might be naturally occurring. So I've simply assumed that all the CO or carbon monoxide was coming from ETS. At that 40 hour week, that person could take in 2,200 milligrams, 2,200 milligrams of carbon monoxide.

Q. Let me interrupt you. Are you saying that if they took in 2,201 milligrams, they would be exposed to dangerous levels?

A. No.

Q. The way these are developed are with safety in mind, and there is a margin of safety built in. These are the acceptable levels, not the unacceptable levels. It's probably worth bearing that in mind. You're not looking at a thread-bare comparison where at one point you're in danger and another point you're not.

Q. Okay. Now, what did you do for Ms. Fontana, how did you compare it?

A. In Ms. Fontana's case, based on the circumstances that I described for you before, about inhalation rate and level of work and number of flight hours, I concluded that it would take Ms. Fontana and her circumstances of exposure about 23 months to get that same amount that the work

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population person would get in a week. And that's based again on inhalation rate, number of hours flown per year, concentration of carbon monoxide in the flight cabin, that type of thing.

Q. Dr. Teaf, why would you pick carbon monoxide?

A. Carbon monoxide, as I said, is ubiquitous, it's very common, acknowledged to be an element of tobacco smoke or of ETS, in this case.

It is one of those that approaches its PEL by the closest margin, that is, its presence even at atmospheric levels begins to approach its PEL by the concentration of any other chemical.

I thought it would be good to make this example knowing that other examples are lower than that.

Q. We heard about arsenic, you and I have talked about arsenic. It's been brought up in the court. Did you make that comparison with regard to arsenic?

A. I did, and 10 or 12 other subtances as well.

Q. Tell us about arsenic.

A. Because of the fact of, as I said, arsenic is such a low concentration in the flight cabin and

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been understood to be, it would take on the order of 500 years to get the same amount that a worker would take in given the occupational PEL of 10 micrograms per cubic meter.

So that calculation, done the same as this, gives you a number that's considerably longer.

Q. Approximately how long?

A. 500 years.

Q. I'm sorry?

A. 500 years.

Q. Doctor, do we have one chart that's going to summarize what you talked about for us today?

A. Yes.

Q. Okay. Explain to us what we're seeing here.

A. This is an example again for carbon monoxide, picking one example of the others that we've done. And I have included Ms. Fontana to the lower left-hand side there, .05. And again, if you remember the units that I mentioned before, milligrams, chemical taken in per kilogram body weight, kilogram is about 2.2 pounds, per day.

I said I would average these -- not average them, but normalize them. I would take into account that home exposures are much longer, and

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office worker exposures were longer, and concentrations also differ somewhat. Concentrations are different in the airline cabin than they are in the office, different in the office than they are in the home.

I've also provided, all the way to the right-hand side, a comparison with what the intake would be at the permissible exposure limit for this person over a 40-hour time period.

MR. UPSHAW: Thank you, Doctor.

CROSS EXAMINATION

BY MR. GERSON:

Q. Dr. Teaf, good afternoon.

A. Good afternoon.

Q. According to you, it sounds like a person with lung disease would be a lot better off if they lived and worked on an airplane where people were smoking.

Is that kind of the sum and substance of what you're telling us?

A. No, sir.

Q. Wouldn't they be better off than living in a house where there was a smoker?

A. I simply pointed out the fact that if you make that comparison, you draw the conclusion that

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the risks are lower than they would be for a person in an office with smoking or at a home where a smoker was present, based on the data that are available in the literature.

Q. Toxicology is the study of poisons and their effect on the human body; is that correct?

A. I would not have characterized it that way, no, sir, and I don't think I did characterize it that way.

Q. How do you characterize it that's different from that?

A. The definition that I gave earlier was that it's the study of the adverse effects of chemicals on a biological system. It could be a human being, it could be another animal. But it takes into account also issues of exposure and makes the distinction between the presence of a material and the significance of that material in whatever circumstances the exposure is occurring.

Q. So what you're telling us is that lots of things can be poisonous if they are exposed to human beings for a long enough period of time?

A. If the exposure is long enough and the concentrations are great enough, it's true that a number of substances, including the example that I

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gave of Tylenol, can cause adverse effects, yes, sir.

Q. So even things that are supposed to be good for us, like vitamins, if you took too many of them, that would be bad, right?

A. You can certainly take, I think, as I said a moment ago, enough to cause yourself a problem, even for things that are generally considered to be good.

Q. Well, a toxicologist like yourself could make a case for that, right?

A. I think that's an accurate statement, that in the right set of circumstances, and that's why there are warning labels on vitamin packages.

Q. So toxicology measures the exposures and whether the tolerance levels of human tissues, by what you decide the research shows, have been exceeded; is that an accurate statement about what you do?

A. Could you repeat that question?

Q. Yes. What you do is you take the minimum tolerance levels or the maximum tolerance levels of exposures to certain chemicals, according to the way you read the literature, and then you create a statistical model, like you've done in this case, to

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say whether it's unsafe or it's not unsafe to have a given exposure; is that correct? Do you understand that?

A. I understand you. I didn't know there was a question, I'm sorry. I would not have characterized it that way, and I'll explain why.

It isn't anything that I, myself, have developed. It is an analysis that I prepared here today. But the permissible exposure limits, as well as similar guideline values like the reference dose and that type of thing, from the EPA, are consensus values, and they're based on the evaluation of the literature by a large number of people and a consensus decision as to what is a conservative review and assessment of the toxicology.

So if that's what you meant, then I agree with you.

Q. So we have to rely on doctors to tell us if the amount of something is actually harmful to a person?

A. Again --

Q. That's a question. I'm sorry if I'm not making myself clear.

Isn't it true that we have to rely on doctors to determine whether the amount of a

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substance that a person is exposed to has passed the level where it becomes harmful?

A. For example, a doctor of toxicology, is that what you mean?

Q. For example, Tylenol. Now, do you know how many Tylenol I have to take for it to harm me?

A. I could make a good assessment, yes, based on you body size, and assuming that you don't have any other liver problems, for example, that would cause you to be less tolerant than another person.

Q. How do you know what the harms would be? That would be something that a doctor would have to say, isn't it?

A. No, sir.

Q. In fact, isn't it true that we're all -- that constantly, as we learn more about the human body and we learn more about science, as time goes by, that we're revising what we think and what we believe to be harmful on us or what's not harmful on us, isn't that true?

A. To the extent that new information becomes available, we absolutely try to integrate it into all the decisions that are made, no question about it. The substances that I considered in this evaluation are well understood, however.

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Q. Just some examples. Is asbestos a toxic agent?

A. If exposure to asbestos occurs for a long enough period at a great enough concentration, it can certainly cause harm.

Q. And we've changed our view about whether this material is safe or not, haven't we?

A. I don't know that we've changed it any time recently.

Q. Well, within the last 50 years or so, we have come to understand that this is a dangerous material?

A. Under the circumstances of the exposures that were present in industrial environments, I think we've learned that.

Q. Well, let's not mince words. The fact is, there isn't any use of asbestos that's permitted any more in any environment where people are going to be exposed; isn't that true?

A. I don't know the regulations on asbestos, sir.

Q. Well, how about coal dust from coal mines, after black lung syndrome was discovered, we then decided that coal dust was unsafe. And it was dangerous for people to work in mines for extended

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periods of time without having some maximum amount of respiratory protection, isn't that true?

A. Absolutely true. And I would have to remind you again that you've made the point that the concentration and the length of time is critical to identifying whether it's a problem or not.

If a person went down there for a day or went down there for a half an hour a day or an hour a day, they probably would not have had the problem that a person with eight to twelve hours, day after day, for years, had.

Q. So you're talking about degree?

A. Toxicology is an evaluation of the degree of hazard based on the kinds of exposure, which is what I consider --

Q. You wouldn't want to breathe coal dust a half an hour a day, would you?

A. It's -- I would not personally want to do that. The point is that it's not whether I want to do it or not, it's whether or not it would create a hazard for me.

Q. Let me give you one more example. Fifty years ago we were still using lead-based paint, weren't we?

A. Yes, I believe we were.

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Q. And today we don't use that anymore?

A. That's correct.

Q. Because we've learned more about the dangers of it?

A. Again, I don't want to respond to your statement. So if there's a question --

Q. Well, that's a question. Don't you agree that that's because we've learned more about the danger of lead?

A. We have learned a lot about the dangers of lead as well as the circumstances in which exposure is not significant. And there are those.

Q. And in all three examples that I gave, the lead, the asbestos and the coal, if we went back 50 or 60 or 70 years ago -- this courthouse was here, by the way -- there would have been toxicologists like you testifying under oath that those things weren't harmful, wouldn't there?

A. I couldn't really say that. I would only tell you that in the example you gave for lead, there are acceptable clean-up concentrations for soil which take into account the very kinds of considerations that you mentioned. And they're not zero values. There are soil levels that are acceptable for residential exposure, because they

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don't allow the exposure to get beyond the point at which it's a problem.

Q. You are the -- in addition to your teaching, you also own a company called Hazardous Substance and Waste Management Research?

A. Yes, I do.

Q. That's a corporation?

A. Yes, it is.

Q. You're the owner of the corporation?

A. Yes, sir.

Q. And that's the company that you use to market and provide your services as a forensic toxicologist, correct?

A. I'm not a forensic toxicologist, no.

Q. Isn't that what you're doing today?

A. No, sir.

Q. Well, you market your services to various corporations that are being sued and need to have you come to court to testify; isn't that true?

A. That is one of the things that I do. I also work for a variety of city and state governments to provide guidance on what are acceptable sets of circumstances to deal with problems that they have as well.

Q. So what all that means is that -- you've

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not testified in any other tobacco smoke case, have you?

A. Not to date, I have not.

Q. All your other cases have been cases where at least 70 percent of the time you're brought to court to testify in defense of somebody who in one way or another has been accused of polluting the environment?

A. I would say that about 70 percent of the cases that I work on have something to do with defense-related aspects, but I would not accept your characterization that I go to trial 70 percent of the time for the defense, no.

Q. But the cases that you work on, whether they go to trial or whether they get settled before they get to trial, 70 percent of the time or more, you're trying to help someone who has been accused of polluting the environment?

A. In a significant proportion of those cases, the reason why --

Q. Is that so? Would you answer my question first? You can give any explanation you want, I don't mean to cut you off. But I am entitled to get a direct answer.

MR. REILLY: Excuse me, I think he is

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giving an answer.

THE COURT: Overruled.

Answer the question then give you explanation.

A. The answer to your question is no. And the explanation would be that, in a large proportion of the cases, the reason why they don't go to trial is that I've made a recommendation to the person I'm working with is that they simply weren't right when they first came to me, that there wasn't a hazard.

And I've said to them: Look, you need to rethink your position here. There either is exposure that is unacceptable or the air concentrations are too high. You misunderstand the role that I play.

BY MR. GERSON:

Q. So, 70 percent of the time someone who has been accused in one way or another of polluting the environment hires you and sometimes you tell them that if they go to court, they're going to lose. So less than all of those cases actually get to court. Is that an accurate restatement of what you just told me?

A. No, I don't think it is.

Q. How is it not correct?

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A. You suggested that there was a -- some sort of an insistence on my part that they not do or do something. All I said was I take the data, I review the data, and I make recommendations.

Sometimes those recommendations are that we simply can't support the initial position that was being taken, the concentrations are too high, the soil is too contaminated, the ground water is too contaminated, you need to take remedial action, you need to drop the air concentrations.

There's a variety of recommendations I could make. But they're made on the basis of availabile information, not on the basis of what somebody already told me was made indicates.

Q. How did you get to court in this case?

A. I don't understand the question.

Q. Tell us how you got involved.

A. I spoke to Mr. Chumbley and reviewed --

Q. The gentleman with his arms folded and the glasses on, that's Doug Chumbley. That's who you spoke to, right?

A. I did. And another attorney from Winston-Salem, or from Charlotte, by the name of Stephanie Perry, and was asked whether or not I was familiar with the constituents or the agents that

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are present in environmental tobacco smoke, and would I meet with them to discuss reviewing some data?

Q. Well, is it that you were in contact at all about this with -- was it Mr. Chumbley that you spoke to first or Ms. Perry that you spoke to first?

A. I expect it was Ms. Perry.

Q. Ms. Perry, how did you get in contact with Ms. Perry in the first place?

A. I have absolutely no idea how she got my name.

Q. So she contacted you?

A. Correct.

Q. How is it that Mr. Chumbley becomes involved?

A. I have absolutely no idea. He arrived at my office and we had a meeting.

Q. Well, you have worked for the Carlton Fields law firm before this case, haven't you?

A. Yes, I have.

MR. GERSON: That's your law firm, isn't it?

MR. CHUMBLEY: Yes.

BY MR. GERSON:

Q. Yeah. So you're not being straightforward

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with us if you tell us that you have no idea how he got to you. You've worked for his law firm at least three times before, isn't that so?

A. That part of the answer to your question is yes. I've worked for other lawyers in other offices of his law firm. I have not met Mr. Chumbley, did not know him prior to this. And over 16 years, it isn't unusual for me to work for a law firm a couple of times.

Q. Well, when you did meet him, he immediately identified himself as being with the Carlton Fields law firm, correct?

A. I think I probably knew that before he arrived, yes, sir.

Q. And you knew that that was a law firm that you had worked for in other cases, correct?

A. Yes, I did know that.

Q. Now, besides this case, besides Marie Fontana's case, are there other cases that you've been hired in to work for Mr. Chumbley's law firm besides those other three?

A. No, sir.

Q. Aren't there some other lawsuits against Mr.~Chumbley's client in this case, RJ Reynolds Tobacco Company, that you've been hired on?

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A. I understand that there are actually quite a few more cases, yes. Although, to my knowledge, I haven't been hired by Mr. Chumbley's law firm, no.

Q. Have you been hired by anybody else for any other cases besides this case?

A. I'm reviewing one other case.

Q. So there's two cases, is that right?

A. I'm reviewing one other case besides this. I don't know how that will come out.

Q. What case is that?

A. I don't recall the name of the person.

Q. When you were asked that in your deposition -- Mr. Hunter took your deposition about a month ago, and when you were asked that question, you refused to tell him, didn't you?

A. I did not.

MR. UPSHAW: Objection, Your Honor.

THE COURT: Overruled.

BY MR. GERSON:

Q. Now, the fact is that you have never been involved in a tobacco smoke case before this case?

A. That's correct.

Did you -- I want to make sure that you heard the answer "no" to the last question before this, that you were not correct?

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Q. I'm sorry?

A. In the previous question, I just wanted to make sure that you actually heard my answer, because there was an objection, and it might have gotten mixed up in there, that it wasn't true that I refused to give that information.

Q. It wasn't?

A. Correct.

Q. I did hear you, but I guess there's something more you want to say about that. I don't want to prevent you from doing that.

So what you mean is that you didn't refuse, but that you were instructed to refuse, and then -- by Mr. Engram, and then you followed Mr. Engram's instruction and you you refused; isn't that what happened in the deposition?

A. I don't recall it that way, no.

Q. You want me to show it to you?

Well, I don't want to make everybody wait. So I'm going to put it over here on the table and we'll come back to that a little later. Okay.

So you get a fee for what you've done in this case, correct?

A. Yes, sir. My firm gets a fee for the time that I spent.

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Q. The deposition was taken in February of this year, so it was not long ago, correct?

A. About a month ago, yes, sir.

Q. And since then, how much time have you spent on this case?

A. Including having been here in Miami for three or four days, I've probably spent 50 hours.

Q. And how much -- so how much will you be charging?

A. $155 per hour is the rate that my firm charges for my time.

Q. Roughly how much money have you not billed yet that you're going to bill for?

A. It's about $6,000.

Q. And as of the deposition in February, you had already billed over $60,000?

A. In the past eight or nine months, ten months, yes, sir.

Q. So your bill is something over $65,000 for everything that you've done in this case up until now?

A. Since May of last year, yes, sir. My staff and I. Yes.

Q. Okay. Here's the portion of the deposition that I couldn't find.

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Page 53, do you remember this question and answer, at Line 18: "Now, have you billed them on any other cases?"

And then Mr. Engram says: "Well, to the extent that the witness has not been disclosed" --

MR. UPSHAW: Objection as to what Mr. Engram says. It's not part of this case.

MR. GERSON: Well, he instructs him not to answer. That's the part that he said didn't happen.

THE COURT: Overruled.

BY MR. GERSON:

Q. "Well, to the extent that the witness has not been disclosed in any other case at this time, we are going to insert an objection and instruct him not to answer that question."

Do you remember that exchange? Do you want me to show it to you in black and white?

A. I assume that you're reading it correctly.

Q. Take a look right there.

MR. UPSHAW: I'm going to object. If this is impeachment, it's improper.

THE COURT: Overruled. He brought it back up.

A. I didn't actually respond at all to that

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question.

BY MR. GERSON:

Q. You didn't answer, did you?

A. Mr. Engram responded and Mr. Hunter asked me another question. I didn't say anything at all.

Q. Well, do you mean that after Mr. Engram instructed you not to answer, if Steve had asked you to answer again, you would have?

A. I wasn't asked again. I don't know what I would have done. I simply moved on to respond to his question, sir.

Q. Okay. So now you have been paid over $60,000 for the work that you did in this case, right?

A. For the past ten months, yes, sir.

Q. And that involves putting together this analysis of my client's exposure to smoke and how you think that that exposure could be compared to people in other everyday settings in life?

A. That was one element of what I did, yes, sir.

Q. And so, part of what you included were some assumptions that you had had to make about the number of hours that she worked, the number -- the nature of the flights she was on, and a long list of

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other variables, some of which I'm going to discuss with you in a little bit more detail in a minute or so. But just in general, that's your methodology, right?

A. Yes, sir.

Q. And so you kind of have a formula where you take all these facts, and then you put them together, and at the end you come out with a result that tells you what the exposure or risk assessment was; is that correct?

A. That's a fair statement, yes, sir.

Q. And so the conclusion that you get is only as valid as the correctness of the assumptions that you make, am I right?

A. Well, we're not trying to make precise estimate of anything. What we're trying to do is make sure that we make an estimate, to the best extent that we have data, and that that assessment be a conservative one with regard to what the conditions were; or if there's uncertainty, that we understand what the sensitivity of any of those assumptions is.

Q. Like I said, we're going to talk about what the assumptions were in a few minutes. But basically you're telling us that you make an

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assumption or an assessment of the information that's available and that gives you A.

And then you take other information and you make an assumption about that, and that gives you B. And then C and D.

And then you add them all up. And when you're done, you have a total, and that's your opinion.

So what I'm saying to you is that, well, if A was different, your opinion would be different. If B was different, your opinion would be different. And so on, with all of the things that you made assumptions about. Wouldn't you agree that that's a fair way for me to look at it?

A. Each of those will have some effect on it, yes, sir.

Q. And you didn't -- you have one opinion that you gave us, and you didn't do it in ranges, or considering other assumptions that could have been made; you made your assumptions as Mr. Upshaw walked you through it. You get to the conclusions that were represented on all the charts that you showed us, isn't that so?

A. I wouldn't call it one opinion, but, yes, sir, it is certain elements of the opinion, yes.

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Q. So one of the things that you had to make assumptions about was how much oxygen she would use by how hard she had to work while she was in the cabin. And you compared her to a -- it was the middle.

Of the five options, it was the third one, and it was the one that you called light activity, is that right?

A. That's the definition that's provided by U.S. EPA, yes.

Q. And you had a little picture of a waitress on there, right?

A. I did.

Q. Have you ever been a waiter?

A. Yes, I have.

Q. And you think being a waiter or a waitress is light activity?

A. Yes, sir.

Q. Have you ever pushed one of those carts up the aisle of an airplane?

A. No, sir, I haven't.

Q. Do you know how much they weigh?

A. No, sir, I don't.

Q. Do you know how many times, over the course of a flight from New York City to Frankfurt,

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Germany, an airline stewardess has to push one of those carts up and down that hallway or aisleway in the airplane?

A. I have not done it myself. But I fly about 150,000 miles a year. I see it quite frequently, yes, sir.

Q. And you think that's light activity?

A. Yes, sir, you have to remember I think it's important that we are talking about the duration, the continuous level of the activity.

So as I acknowledged, there will be times in which a person works harder or is sitting down, for example. And over the course of time, in that instance, one cubic meter per hour is a standard and reasonable assumption.

Q. So are you telling us that on the flight --

You fly so much and you see airline stewardesses sitting around?

A. They certainly sit down sometime, sir, yes.

Q. During take-off and landing, right?

A. No, sir.

Q. Now, we're really not that concerned with the activity level here, in terms of whether your

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assumption is valid or not; what we actually want to know is what the breathing rate of that person is, right?

A. Yes, sir.

Q. In order to get the breathing rate, you've looked at the number 3 category of activity and that's what you used?

A. I put the number 3 category of activity where it is because I used it. Because that is the EPA assumption for those kinds of activities, yes, sir.

Q. Aren't there other things that come into play every week in the life of an airline stewardess that affect the breathing rate beside just the amount of physical exertion needed to do the job?

A. Not to the degree that would change that assumption of inhalation rate, no, sir, it's a conservative assumption.

Q. How about stress, does stress increase somebody's breathing rate?

A. Not the kind of stress you're talking about, but it can, physical stress can.

Q. Not any other kind of stress?

A. I would say not to a reasonable degree, that it would change that number, no, sir.

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Q. Do you think people breathe heavier when they're in turbulent air and the plane is bouncing around?

A. They may for the period of time that it is in turbulent air. Again, remember the increment of time that we're talking about.

Q. How about complaining passengers?

A. How about them?

Q. How about the -- would that affect the breathing rate of an airline stewardess?

A. I would think it wouldn't affect it for an experienced flight attendant, no, sir.

Q. Now, you didn't recalculate your opinion based on a higher level of activity or breathing rate, did you?

A. No, I didn't.

Q. You didn't bring anything with you into the courtroom today, did you?

A. I have a box of material if I need it, but no, I don't have it up here with me.

Q. You haven't given anybody the calculations that you made concerning this, have you?

A. No, but I know what they are.

Q. Now, you also made comparisons and one of the assumptions was what it would be like living

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with a person who smoked cigarettes as opposed to flying in an airplane where there would be more than 100 people smoking at one time.

And you think that it's four to -- the environment -- the amount of ETS that somebody is subjected to is four to ten times higher by living with one smoker. Isn't that what you -- one of the assumptions that you made?

A. No, it's the conclusion that I drew, and I explained why those numbers are what they are. It's a function of ventilation, which in the case of a home is typically less well ventilated.

Well, in every case that I know about is less well ventilated than an airline cabin. Therefore, we don't have to build in assumptions about what the ventilation was. We simply use the concentrations that are present in the air as our measure of what the ventilation was.

Q. We'll talk about that in a minute, but on the airplanes that you fly in, can you open the window?

A. That's not what I mean by ventilation.

Q. Can you open the door?

A. That's not what I mean by ventilation.

Q. How high is the ceiling in an airplane?

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A. Depends what kind of equipment that you're flying on, but it can be as high as six or seven feet.

Q. How high is the ceiling in your house?

A. Probably eight feet.

Q. You assumed for this computation that the person is home 16 hours a day; is that right?

A. I did.

Q. When is the last time you were home 16 hours a day on any kind of a regular basis?

A. Not any time recently, I can tell you that. However, that isn't the person that I'm talking about.

We want to know what's the likelihood of comparison with a person who lives with a smoker. It doesn't have to be me. Not everybody is home 16 hours a day. But if you're home 16 hours a day, this is the level of exposure you'll get. If you're not home 16 hours a day, as I'm often not, you'll get less exposure.

Q. And not only would you have to be home, but the smoker would have to be home smoking 16 hours a day, too, right?

A. Yes, sir.

Q. So if we were to change those variables

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around --

A. Actually, that's not the case.

Q. -- we would get a different outcome, wouldn't we?

MR. UPSHAW: Your Honor, I think he wasn't finished with his answer.

MR. GERSON: I didn't mean to cut you off. Say anything you want to say. I don't ever want to be accused of not letting you say something you have to say.

THE WITNESS: I appreciate that. I was saying it doesn't necessarily mean that the person has to be home 16 hours a day and the smoker has to be home 16 hours a day. The air concentrations remain after a person has smoked for some period of time. That's why, again, you're looking at an increment of time after which a concentration is measured.

BY MR. GERSON:

Q. Now, what do you know about the ventilation rate on airplanes?

A. Some of the literature that I have reviewed has covered it as an ancillary point.

Q. You didn't talk to the man that testified yesterday.

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What was Rodney's last name?

MR. HUNTER: Sands.

BY MR. GERSON:

Q. Rodney Sands, a ventilation expert?

A. I don't know Mr. Sands. I've never met him or spoken with him.

Q. Mr.~Chumbley never told you that if you needed to know something about airplane ventilation, that they had somebody that they had hired in this case who knew something about that?

A. I didn't have that discussion with him, no, sir.

Q. You don't know anything then about what Mr. Sands' opinions are concerning how well the ventilation works in an airplane?

A. I don't know that, sir.

Q. And I don't want to go through the whole thing, but ventilation aside, if I was standing here and I was smoking this cigarette and blowing it out in your face, you would be breathing it, notwithstanding any ventilation; isn't that correct?

A. In this particular moment you would be; and then when you left, I wouldn't be. But you would eventually get a measure of ETS.

Q. So, if a flight attendant was exposed to

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someone smoking a cigarette row after row after row, she would be continually getting it, right?

A. For the period of time that she was present in the smoking section. Of course, not in the period of time that she was not in the smoking section.

Q. That's another good point.

So you assumed that when the flight attendant is in the nonsmoking section, that there's no exposure whatsoever; is that right?

A. No, it's not right. That's not what I did.

Q. Well, how did you make your assumption based on that?

A. Let's take the example that I used earlier for carbon monoxide. There are values that are available in the literature both for the smoking section and for the nonsmoking section. And in that instance, the concentrations are about 2.2 times higher in the smoking section.

And I used the 50 percent smoking section, 50 percent nonsmoking section, as I mentioned, to weight the amount of time and the concentration to which she would have been exposed.

Q. Now, you told us that you referred to --

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you relied on a lot of studies?

A. I have reviewed many studies, yes, sir.

Q. You did a lot of reading. That's what you did in order to earn $61,000 up to the date of your deposition?

A. I reviewed and considered and evaluated a ton of literature, yes, sir.

Q. Ton of literature. You didn't do any studies yourself?

A. I consider that to be a study, if you will.

Q. Well, that's a study of literature, but you didn't do any study of the conditions that you were going to be giving an opinion on, did you?

A. I did not. And that's the way this work is done. We rely upon the peer-reviewed literature for those individuals who may have produced data, that we will then compare to other individuals who produce data.

Q. And I think what you said on direct examination is that -- and I wrote this down, tell me if I got this wrong -- but didn't you say that "I have reviewed everything I could get my hands on"?

A. I think I said that, yes, sir.

Q. And is that a true statement?

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A. Yes, sir.

Q. And referring to Plaintiffs' Exhibit 12 in evidence, you never once reviewed this, did you?

MR. UPSHAW: Counsel, may I see that before you show it to the witness?

MR. GERSON: Sure.

BY MR. GERSON:

Q. You reviewed everything you could get your hands on. But as of the time of your deposition, at least, you had never reviewed that, had you?

A. Yes, I had, as I testified in my deposition.

Q. Are you saying now that you testified in your deposition that you had reviewed the Surgeon General's Report?

A. What I said was that I had not focused on it particularly, but I had reviewed it.

Q. You were asked at Page 34, by Steve: Do you accept the Surgeon General's opinion on whether environmental tobacco smoke causes diseases in healthy nonsmokers?

And you said: I have not reviewed that in detail, that particular document.

Did you give that answer to that question at that time?

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A. I did. And that's consistent with what I just told you a moment ago. It's not consistent with me not having reviewed the document, which was the question that you asked me.

Q. So you charge these people over $60,000 to read everything you could get your hands on, and you never looked at the Surgeon General's Report for 1986 in any detail?

A. At the time of my deposition, I had not reviewed that document in detail. It simply isn't something that is not available to me by reviewing the literature on which the Surgeon General's office relied to write that document.

Q. What is the title of that Surgeon General's Report?

A. It says: The Health Consequences of Involuntary Smoking, Report of the Surgeon General, 1986.

Q. And if you turn to Page 229 -- I folded this so the jurors could find it when they deliberate -- there's a section in here, this chapter, here you go.

What is Chapter 5 entitled?

A. It says: Toxicity, Acute Irritant Effects and Carcinogenicity of Environmental Tobacco Smoke.

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Q. So this is in the Surgeon General's Report, and there's a chapter dealing with toxicology, and you're a toxicologist, and you reviewed everything you could, but you didn't think it was important to look at this in any detail?

A. The reason why I review documents is to get the data from those documents. It's the same reason why the Surgeon General's office reviewed data.

I don't need to review someone else's interpretation of the data if I've got the original data myself.

Q. So you say it's the same data then, huh?

A. Many of the same studies that were cited in here I have reviewed.

Q. Well, what you did, among other things, is that you prepared a bibliography of the environmental tobacco smoke literature that you reviewed, correct?

A. Yes.

Q. Is there a copy of the bibliography that you prepared?

A. Yes, it is.

Q. And it's alphabetical, correct?

A. Yes.

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Q. And here in the Surgeon General's Report, in that chapter on toxicology, not the whole book, just the chapter on toxicology, there's a bibliography, isn't there?

A. Yes, sir.

Q. Both of them are long, but I want you to look at the first page, that starts with the AAs and the BBs, and you look at your bibliography and you look at the Surgeon General's bibliography, and tell me if they look anything alike.

A. Well, they look quite different because different things were considered here. The first several here have nothing to do with environmental tobacco smoke in the Surgeon General's reports because they have to do with anatomy and physiology of the lung, which I certainly didn't use in mine.

Q. All of that is in alphabetical order and that's why it's in the Surgeon General's Report and not in yours?

A. I don't know why it's in the Surgeon General's Report. These are functional anatomy and functioning of the lung. This is an ETS bibliography.

Q. If you didn't read this, how do you know what they are?

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A. I read the title while you were standing here.

Q. That's one article. But they're in the chapter on toxicology, aren't they? Isn't that the chapter on toxicology that has a bibliography with hundreds of articles after it?

A. This is definitely the bibliography for that chapter, and it does not compare with this document because they were written for different purposes.

Q. Right. Right.

Now, you said -- how many chemicals are there in environmental tobacco smoke?

A. I didn't say.

Q. You said something about it in your direct testimony. I know I wrote it down. You don't remember what that was?

Do you know?

A. Do I know whether I said it or --

Q. Do you know how many chemicals there are in ETS?

A. No, sir, I don't think anybody knows how many there are.

Q. Well, when you looked at the Surgeon General's -- by the way, did you look at any of the

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other Surgeon General Reports beside this one?

A. I reviewed that one, not the others, no.

Q. You didn't even look at the 1984 one, did you?

A. I don't recall looking at it, no.

Q. That's the one that dealt with how smoke causes lung disease. You didn't look at that at all, did you?

A. As I've mentioned a couple of times, my efforts were focused on ETS, and I know there's a large literature on other elements of smoking which I have not reviewed.

Q. You didn't look at the 1964, the original one, that connected smoking and disease, did you?

A. I don't know to what extent that focuses on ETS, but no, I didn't review it.

Q. So you didn't see this list of --

MR. UPSHAW: I would object. First off, you shouldn't be showing it to the jury without me seeing it first. Second, I object. He just said he didn't review the 1964 Surgeon General's Report.

MR. GERSON: This is from the 1986. It's a blow-up of a table that's already in evidence. That's why I didn't show it to you

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first.

But if you want to look it over first, why don't you do that, and I'll ask the witness another question while you're doing that.

MR. UPSHAW: That's fine. You tell me it's of the '86, that's fine.

MR. REILLY: If you review the transcript, apparently Mr. Gerson misrepresented --

THE COURT: It's apparently cleared up. If there was a misunderstanding, it's cleared up.

BY MR. GERSON:

Q. Have you ever seen this list of chemicals that are in environmental tobacco smoke?

A. That's a mainstream smoke list, that's not an ETS list, as I recall, from looking at it before.

Q. Aren't the chemicals that are in the smoke that you draw into your lungs the same ones that are in the smoke that you breathe out of your lungs?

A. No.

Q. They're different?

A. Well, you absorb a goodly amount of that material, as I mentioned earlier, that ETS is not equivalent to either mainstream or sidestream smoke.

Q. Well, so the amounts or the concentrations

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are different; but what comes out is the same stuff that went in, isn't it?

A. No, sir.

Q. How is it different?

A. Well, it's different in the fact that the particulates are reduced on the outflow, because you have retained some in smoking. The volatiles, some of them have been absorbed in the smoker and will not be released until they've been metabolized.

Q. Are you telling us that all the things on this chart that are in the 1986 Surgeon General's Report, the one that deals with environmental tobacco smoke, are not really in there?

A. No, sir, I didn't say any such a thing as that.

Q. There are literally dozens of these chemicals, aren't there?

A. There are dozens of chemicals certainly in ETS. Absolutely.

Q. And in making the assumptions that you made in your analysis, you did not take into account or rely on any of the science that was in the Surgeon General's 1986 report on ETS, did you?

A. Yes, I did. I didn't rely upon that particular document. But as I said, many of the

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resources that were used by the Surgeon General's office I have reviewed as well in their original form.

Q. Have you been shown the testimony of Julius Richmond, who was a former Surgeon General? He testified in a trial that was held about four years ago --

A. I have not seen any of that testimony.

Q. -- and we played it in court. They didn't show you that?

A. No, sir.

Q. $60,000 worth of time spent investigating and you never looked at that?

A. I have not seen it.

Q. And there was also some testimony from that very same trial by the principal scientific editor for all the Surgeon Generals' Reports, a guy named David Burns. Did they show you that testimony, too?

A. I have not seen that.

Q. You've not seen that either.

Do you know, on your own, without having seen that testimony, the scientific process that is used by the Surgeon General and the chief editor for making sure that the things that go in his report

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are correct and accurate?

A. I don't -- I'm not independently aware of that, no, sir.

Q. You don't have -- so you didn't see it in those -- in that testimony and you don't know anything about it on your own?

A. I'm not familiar with the testimony that you're describing. Whether or not I would be familiar with it, I guess I could decide once I'd seen it.

Q. So in making the assumption -- in preparing for this case, you made up a table that listed all the references that you thought were important from all your reading, is that right?

A. That is a long list. That is probably most of those that I've read. But I've read a lot more probably since the time I prepared that list. But it's a pretty good representation.

Q. Pretty good representation. Take a look at it. I've put some papers on it.

Isn't it true that you relied on articles written by Mr. Ogden, who is the last witness that testified in this case before you, more than 75 times?

A. I'm sorry?

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Q. You referenced articles that were written by Mr. Ogden, who works for RJ Reynolds Tobacco Company, and testified yesterday and this morning, more than 75 times?

A. I have no idea what you mean by that question.

Q. If you count the number of times Mr. Ogden's name appears on the list of materials that you used, there's more than 75 times that you listed articles that Mr. Ogden wrote?

A. I do understand what you mean now.

This chart, this table is a very large computer spreadsheet. Computer spreadsheets are limited by the size of the computer terminal face. And as a result, what I've done is printed out the spreadsheet that lists all the reviewed information with the concentrations in air. And then I've had to break it up to print it into six or seven different sections.

I don't know why the name would appear on here 75 times, but these pages, because there are 75 pages on here, I've only relied on probably two or three documents that were prepared by that author. So I don't know if that answers your question.

Q. Well, why does his name appear on the

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list? I don't think he wrote 75 things either. But the things that he did write were listed by you over 75 times if I counted them right.

A. Let me try to explain it again. The spreadsheet, itself, has about probably 150 or 200 articles listed on it with concentrations. And the document goes out this way probably for 30 or 40 chemicals.

And in order to print this document, it has to be cut off at the end of the page, and then the next six or eight chemicals, then the next six or eight chemicals. These pages repeat themselves over and over on the left-hand margin. It's just simply not what you think it is.

Q. Well, you did have to decide, for the computation that you made, what the amount of ETS was in the air that was breathed by a flight attendant, did you not?

A. Yes, sir.

Q. You did not rely on anything the Surgeon General said about that, did you?

A. Again, I relied upon documents that were also reviewed by the Surgeon General as well as documents that are probably 15 years more recent than that. So I've seen some of them, probably not

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seen others.

Q. And part of what you did rely on was the so-called science of Mr. Ogden?

A. There's one or two articles, and I think they are perfectly well defended in the peer-reviewed literature, whoever wrote them.

Q. Now. This is No. A-18.

MR. UPSHAW: Do you want to ask him about it first before you show it to him?

BY MR. GERSON:

Q. Mr.~Chumbley represents RJ Reynolds in this case. Did he ever show you any of the documents where Reynolds said that it was part of its action plan --

MR. UPSHAW: Hold on.

THE COURT: Wait a second. Show him the document and ask him if he recognizes it.

BY MR. GERSON:

Q. Have you ever seen this document before?

A. No.

Q. Were you told that there was a plan on the part of RJ Reynolds --

MR. UPSHAW: Objection, Your Honor. Sidebar, please.

THE COURT: Okay.

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(The following proceedings were had at sidebar:)

MR. UPSHAW: Your Honor, you can see where this is going, so can everybody else in this courtroom.

Again, we're trying to get conduct with a witness who isn't even associated with Reynolds, doesn't, didn't even see the document. Yet he wants to cross-examine him on the conduct of Reynolds and a plan that Reynolds had.

See where we're getting to? It's a conduct case.

MR. GERSON: Well, it was already connected to the previous witness, who he did rely on. The document this morning was connected to Mr. Ogden, Dr. Ogden.

THE COURT: You're taking too many steps. Good try, but no.

(The sidebar conference was concluded, and the following proceedings were held in open court:)

THE COURT: Mr. Gerson, how much longer do you have on your cross?

MR. GERSON: One more question.

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BY MR. GERSON:

Q. Dr. Teaf, you have made numerous references in your testimony to data from the EPA. Are you familiar with the EPA finding that ETS --

MR. UPSHAW: Your Honor, objection. There's a motion in limine on this.

We have to go sidebar, discuss it further.

THE COURT: Okay.

(The following proceedings were had at sidebar:)

THE COURT: This is the North Carolina district court case.

MR. ENGRAM: This report is out of this case.

MR. GERSON: Well, it was until they brought everything about the EPA, all his direct testimony about the EPA findings and their guidelines, that in order to come to the conclusion that he comes to, and I want to ask him if he knows that they find that ETS is a carcinogen responsible for 3,000 lung cancer deaths every year in the United States in nonsmokers.

MR. UPSHAW: Talk about prejudicial value outweighs -- first of all, this report is out

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and that conclusion specifically is out. That's what the Court ruled on, was one of the conclusions the Court ruled on.

Third, he hasn't even asked if this gentleman is familiar with this EPA report.

MR. MCCARRON: Looking at the invoices that he has, that defense counsel -- that he submitted to the defendants, he said that he's read it and he is familiar with it.

MR. UPSHAW: Has that been the testimony here in this courtroom?

THE COURT: Find out whether he's familiar with this document first.

MR. UPSHAW: That doesn't make the document admissible when you have a specific order vacating the findings in that document.

MR. ENGRAM: He has to establish that he relied on this report.

THE COURT: I want to find out. We'll find out.

MR. GERSON: Judge, I'm going to withdraw the question, and I'm still only going to ask one more question.

(The sidebar conference was concluded, and the following proceedings were held in open

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court:)

BY MR. GERSON:

Q. I just have one more question.

Could it be that the Surgeon General came to a different conclusion than you because the Surgeon General considered all the data and articles listed in his report and you did not?

A. No, sir, I don't believe that's true.

MR. GERSON: That's all the questions that I have.

THE COURT: How long is your redirect?

MR. UPSHAW: I don't believe it's going to be very long --

THE COURT: We'll take a ten-minute recess.

MR. UPSHAW: -- but we've been sitting for a while.

(The jurors exited the courtroom.)

THE COURT: Doctor, you're not allowed to speak about your testimony at all during this recess.

(A recess was taken.)

THE COURT: Are we ready to go? We have our next witness lined up?

MR. UPSHAW: Redirect.

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MR. REILLY: Remember, Your Honor, we were going to start on Monday with the next witness.

THE COURT: Thank you. I think the jury will be happy to hear that.

Bring them on in.

(The jurors entered the courtroom.)

THE COURT: Okay, everybody have a seat, relax.

Let the record reflect all our jurors are present and accounted for, and we're ready to rock and roll.

REDIRECT EXAMINATION

BY MR. UPSHAW

Q. Few questions on redirect, after Mr. Gerson's cross-examination.

You mentioned your -- or Mr. Gerson mentioned your company, and I'll use the acronym HSWMR, which is easier for me than to say all the words.

He said that you were, or made the allegation that you were defense oriented, that you only came up for defense issues. Do you remember that testimony?

A. Yes.

Q. I'm going to refer to your CV. I want you

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to tell me, were you appearing with this organization for a defendant being accused of polluting the environment?

Let me ask you about these. Were you with the Technical Advisory Committee in Prague, 2000, the Fifth International Symposium, was that something you were doing for someone accused of polluting the environment?

A. No, sir, quite the opposite.

Q. How about Petroleum Underground Storage Tanks, Technical Advisory Committee, Florida Department of Environmental Protection, was that for some defendant who was accused of polluting the environment?

A. No, sir.

Q. Let's continue down. Safety Committee, Florida Department of Environmental Protection, how about that?

A. It was an occupational safety and health committee.

Q. Technical Advisory Committee, MPG, 1995, MGP?

A. I've done a great deal of work on manufactured gas plants, which were historical sites spread around the country, that they made gas from

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coal.

Q. So that had nothing to do with supposedly defending the accused of polluting an environment?

A. No, quite the opposite.

Q. Substance Advisory Committee?

A. That was what we talked about earlier, that was Department of Labor, Occupational Guideline Panel.

Q. District 2, Florida Emergency Response Commission, does it have anything to do with defending people who were being accused of polluting the environment?

A. No, sir.

Q. And on and on, right?

Mr. Gerson made a big deal about you being paid about $65,000 so far. Does your company work for free?

A. No, sir.

Q. How about the -- did that bill include just your services?

A. Absolutely not.

Q. Now, did we ask you to have your staff work for free for this case?

A. No, sir.

Q. You expect to be paid for your services,

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right?

A. Yes, sir.

Q. Let's go to some assumptions that Mr. Gerson wanted to talk about. First off, breathing rates that we talked about. We had this example, that's not oxygen, is it, breathing rate?

A. No, sir, it's the amount of breaths you take and how deep they each are.

Q. So that's air, not oxygen?

A. Yes.

Q. The waiter being a light activity -- I think you told Mr. Gerson you were a waiter at one time. That value was made up by you out of thin air, you just chose that for a waiter?

A. No, that's the value that U.S. EPA recommends for that level of activity. Again, remembering that it might have slight ups and downs over the course of a work shift, for example, but an average of one cubic meter per hour.

Q. Did you review the NRC study?

A. Yes.

Q. What was that study? Just explain briefly what NRC is.

A. National Research Council of the National Academy of Sciences looked at the question of

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airline cabin environment, and they used 15 liters per hour. I used a slightly larger number -- liters per minute. I used a slightly larger number than that, 17.

Q. So NRC looked at flight attendants and they used what number?

A. Fifteen.

Q. And you used?

A. Seventeen.

Q. Now, what's more conservative?

A. Seventeen is more and is more conservative, it indicates a higher level of activity.

Q. So you gave her more in your calculation?

A. Yes.

Q. By the way, Mr. Gerson said, oh, when there's turbulent air, when there's turbulent air, don't the flight attendants sit down?

A. Generally speaking, if it's turbulent or not.

Q. Why did you assume, when you were doing your comparison between Ms. Fontana's exposure to ETS and a person living with a smoker, why did you assume 16 hours? Explain that to us again.

A. Well, for adults or for children who are,

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for example, not working, or working inside the home, they're certainly going to be there that length of time. That's from 5:00 in the evening until the next morning. That's a reasonable and accepted standard for considering ETS exposure in the home. This could be less than that.

For example, if a person is not there, but it could also be more than that if a person is there all the time, taking care of a young child, for example.

Q. Now, did you -- you said you reviewed a lot of literature, and Mr. Gerson questioned you on some of that literature, questioned some of your literature that you relied on.

You specifically said you relied on articles written by Dr. Ogden, who appeared before you. Did you rely on some articles written by a Dr. Katherine Hammond as well?

A. Yes, I did.

Q. Tell us, again, if you would, please, Dr. Teaf, what was Dr. Hammond's conclusion when she compared flight attendants to persons who lived with a smoker?

A. She concluded that --

MR. GERSON: Objection, Your Honor. This

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is redirect. He's now asking him to --

THE COURT: Sustained.

MR. UPSHAW: This was asked on direct, which was answered, and he brought it up on cross.

THE COURT: His answer that he's relied upon that authority, that's where we're going.

BY MR. UPSHAW:

Q. So you relied upon documents from Dr. Hammond as well?

A. Yes, I did.

Q. Do you recall a 1999 study that Dr. Hammond performed?

A. Yes.

Q. Did she do some comparisons with regard to persons living with a smoker and flight attendants?

A. Yes, as well as occupational exposures.

Q. Did you agree with her comparison?

A. In that particular element, we come out with approximately the same result for people working at or living at the home with a smoker.

Q. Oh, okay. So the same result occurred?

A. Approximately.

MR. GERSON: Your Honor, I object, that's doing what you just --

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THE COURT: Sustained.

MR. UPSHAW: I'm moving on.

BY MR. UPSHAW:

Q. Now, Mr. Gerson brought up the 1986 Surgeon General Report. This is just a different copy. Basically, it's a book compared to a copy of the book. And he brought up Chapter 5. And I don't know where Chapter 5 is in here, but you can find it if you want. And compare the bibliography there with the bibliography that you created for this case, for your review of Ms. Fontana.

Tell us why there's a difference between that bibliography and your bibliography.

A. For one thing, this is not specific to ETS in airline cabins. And to my -- my activities were directed specifically towards that. A large number of the papers that are listed on my bibliography have to do with airline exposures.

The second is that, as I read these, they go into a great deal of detail on the physiology and the anatomy of breathing, for one thing.

And a number of the references that are cited in here have to do with the physiology of the lung and the size of the lung and the anatomy of the lung. I haven't listed any of that, although

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certainly I'm familiar with it from my training and background.

Q. Did anything that you discussed with Mr. Gerson change your opinions with regard to the level of exposure of Ms. Fontana?

A. No, sir, quite the contrary.

MR. UPSHAW: No further questions.

THE COURT: Doctor, thank you very much.

THE WITNESS: Thank you.

(The witness was excused.)

THE COURT: Ladies and gentlemen, we are progressing very fast. And we are going to finish all the testimony, I believe, on Tuesday and have the arguments on Wednesday.

And with that in mind, we have a doctor coming in from -- another witness, I'm not sure it's a doctor.

Is it a doctor?

A doctor coming in from out of town, and he's not able to be here this afternoon, so you're going to have the rest of the afternoon and the weekend off. I hope that's good news.

Sorry to have kept you so late on that one witness and didn't have a break in between, but I thought it was going to go faster than it

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was. I try not to let you sit there for more than about an hour and a half without a break; but obviously I didn't do too well with the last witness.

With that, remember there's probably some publicity on this case, in the newspapers, if you see it, look away, go do something else. Other than that, enjoy a good weekend. Be back here Monday morning, 10:00. We'll start up as close to 10:00 as we possibly can.

Leave your notebooks in your seat and we'll collect them. Other than that, have a good weekend. We'll see you Monday.

(The jurors exited the courtroom.)

THE COURT: Anything else?

MR. HUNTER: Yes, I have a short matter, Judge. Motivated as I sometimes am by my own self-interest, they told us, indicated to us they're going to call two doctors on Monday, Dr. Barry and Dr. Ingram. And I thought this would be a good time to at least bring up, preliminarily at least, that I have strong objections to two more medical doctors.

They've already put on more experts on their case on specific causation and specific

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reference to Fontana than we did. And to call two more medical doctors who will testify concerning her medical condition and its relationship to her environmental tobacco smoke will be cumulative to our case and it would be highly prejudicial, and I'll be unable to survive it.

So I would ask that they make some proffer, at least, today as to why they need two more doctors to testify and not be limited to one, which is what they should be.

THE COURT: What is the subject matter of the two doctors?

MR. ENGRAM: Dr. Ingram, Your Honor, is a pulmonologist. He's going to testify about Ms. Fontana's lung disease. Dr. Barry is an aerospace medicine specialist who is going to testify about the effect of the airline cabin environment on Ms. Fontana's disease.

MR. REILLY: Judge, I think it would be premature to determine whether or not these folks are cumulative. I think you have to wait and hear what Dr. Ingram has to say. And then if you conclude that Dr. Barry is cumulative, that's the conclusion you come to. But I don't

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think you can do this in a vacuum.

THE COURT: Well, what other doctors did we have -- what were the specialists we had before?

MR. REILLY: We've only had one doctor testify, that was Dr. Koenigsberg.

THE COURT: He's the radiologist.

MR. REILLY: They had a radiologist, we've put on a radiologist.

As a matter of fact, when they talk about experts, they had Dr. Richmond, Dr. Burns, Dr. Foley, Dr. Hammond, Dr. Irvin. I mean, we're so anemic on our side at this point, plus when we talk about cumulative, I can't remember the number of flight attendants they had testify.

MR. HUNTER: Well, those were fact witnesses, number one, and I only called one medical doctor on the issue of specific causation.

MR. REILLY: Well, that's a choice you make. They had Dr. Breeden. They decided they'd rather, apparently, call a physiologist than a pulmonologist. But Your Honor will recall that through their physiologist they

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were permitted to provide testimony about the opinion of a pulmonologist, Dr. Petty.

It seems to me --

THE COURT: I'm going to have to see what Barry has to say.

MR. HUNTER: Let me ask this, if you all will tell me this, you don't have to, but are you going to put on Ingram first and then Barry?

MR. ENGRAM: You're right, we don't have to tell you that.

MR. REILLY: We're kind enough to tell you that. We're going to put on Dr. Ingram Monday morning.

THE COURT: Anything else?

(Court was in recess)

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